

Experimental evolution of *Candida* by serial passaging in host cells.

Graf K, Hube B, Brunke S (2021) Experimental evolution of *Candida* by serial passaging in host cells. *Methods Mol Biol* 2260, 145-154.

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Abstract

Experimental evolution is an experiment class of its own; instead of requiring an a priori hypothesis, the genetic adaptation of microbes to defined environments tells us about the underlying pathways and mechanisms. Such experiments are often deceptively simple in their design, based on a single abiotic stressor and what is in essence a long-term continuous culture. However, they generally provide a starting point to thorough follow-up analyses (which are specific for the organism at hand and not part of this method chapter). In this chapter, we describe a method to use a biotic stressor which is frequently encountered by pathogenic fungi-macrophage-like cells-in a serial passaging regime. Experimental evolution under such conditions can reveal new virulence attributes and mechanisms by selecting for adaptive mutations against the host cell-induced stress. It is important to note that every evolution experiment is different, and these techniques should be taken as a general guideline to be adapted to different organisms and questions. Then, it is a powerful tool with many potential applications in pathobiology research.

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